

$\psi(4160)$ $I^G(J^{PC}) = 0^-(1^- -)$ **$\psi(4160)$ MASS**

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
4153 ± 3 OUR ESTIMATE			
4191.7± 6.5	1 ABLIKIM	08D BES2	$e^+ e^- \rightarrow$ hadrons
• • • We do not use the following data for averages, fits, limits, etc. • • •			
4193 ± 7	2 MO	10 RVUE	$e^+ e^- \rightarrow$ hadrons
4151 ± 4	3 SETH	05A RVUE	$e^+ e^- \rightarrow$ hadrons
4155 ± 5	4 SETH	05A RVUE	$e^+ e^- \rightarrow$ hadrons
4159 ± 20	BRANDELIK	78C DASP	$e^+ e^-$
1 Reanalysis of data presented in BAI 02C. From a global fit over the center-of-mass energy region 3.7–5.0 GeV covering the $\psi(3770)$, $\psi(4040)$, $\psi(4160)$, and $\psi(4415)$ resonances. Phase angle fixed in the fit to $\delta = (293 \pm 57)^\circ$.			
2 Reanalysis of data presented in BAI 00 and BAI 02C. From a global fit over the center-of-mass energy 3.8–4.8 GeV covering the $\psi(4040)$, $\psi(4160)$ and $\psi(4415)$ resonances and including interference effects.			
3 From a fit to Crystal Ball (OSTERHELD 86) data.			
4 From a fit to BES (BAI 02C) data.			

 $\psi(4160)$ WIDTH

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
103 ± 8 OUR ESTIMATE			
71.8±12.3	5 ABLIKIM	08D BES2	$e^+ e^- \rightarrow$ hadrons
• • • We do not use the following data for averages, fits, limits, etc. • • •			
79 ± 14	6 MO	10 RVUE	$e^+ e^- \rightarrow$ hadrons
107 ± 10	7 SETH	05A RVUE	$e^+ e^- \rightarrow$ hadrons
107 ± 16	8 SETH	05A RVUE	$e^+ e^- \rightarrow$ hadrons
78 ± 20	BRANDELIK	78C DASP	$e^+ e^-$
5 Reanalysis of data presented in BAI 02C. From a global fit over the center-of-mass energy region 3.7–5.0 GeV covering the $\psi(3770)$, $\psi(4040)$, $\psi(4160)$, and $\psi(4415)$ resonances. Phase angle fixed in the fit to $\delta = (293 \pm 57)^\circ$.			
6 Reanalysis of data presented in BAI 00 and BAI 02C. From a global fit over the center-of-mass energy 3.8–4.8 GeV covering the $\psi(4040)$, $\psi(4160)$ and $\psi(4415)$ resonances and including interference effects.			
7 From a fit to Crystal Ball (OSTERHELD 86) data.			
8 From a fit to BES (BAI 02C) data.			

 $\psi(4160)$ DECAY MODES

Due to the complexity of the $c\bar{c}$ threshold region, in this listing, “seen” (“not seen”) means that a cross section for the mode in question has been measured at effective \sqrt{s} near this particle’s central mass value, more (less) than 2σ above zero, without regard to any peaking behavior in \sqrt{s} or absence thereof. See mode listing(s) for details and references.

Mode	Fraction (Γ_i/Γ)	Confidence level
$\Gamma_1 e^+ e^-$	$(8.1 \pm 0.9) \times 10^{-6}$	
$\Gamma_2 D\bar{D}$	seen	
$\Gamma_3 D^0\bar{D}^0$	seen	
$\Gamma_4 D^+D^-$	seen	
$\Gamma_5 D^*\bar{D} + \text{c.c.}$	seen	
$\Gamma_6 D^*(2007)^0\bar{D}^0 + \text{c.c.}$	seen	
$\Gamma_7 D^*(2010)^+D^- + \text{c.c.}$	seen	
$\Gamma_8 D^*\bar{D}^*$	seen	
$\Gamma_9 D^*(2007)^0\bar{D}^*(2007)^0$	seen	
$\Gamma_{10} D^*(2010)^+D^*(2010)^-$	seen	
$\Gamma_{11} D^0D^-\pi^+ + \text{c.c. (excl.)}$ $D^*(2007)^0\bar{D}^0 + \text{c.c.},$ $D^*(2010)^+D^- + \text{c.c.})$	not seen	
$\Gamma_{12} D\bar{D}^*\pi + \text{c.c. (excl. } D^*\bar{D}^*)$	seen	

NODE=M025M

NODE=M025M

→ UNCHECKED ←

OCCUR=2

NODE=M025M;LINKAGE=AB

NODE=M025M;LINKAGE=MO

NODE=M025M;LINKAGE=ST

NODE=M025M;LINKAGE=SE

NODE=M025W

NODE=M025W

→ UNCHECKED ←

OCCUR=2

NODE=M025W;LINKAGE=AB

NODE=M025W;LINKAGE=MO

NODE=M025W;LINKAGE=ST

NODE=M025W;LINKAGE=SE

NODE=M025215;NODE=M025

NODE=M025

DESIG=1

DESIG=15;OUR EVAL;→ UNCHECKED ←

DESIG=16

DESIG=17

DESIG=18;OUR EVAL;→ UNCHECKED ←

DESIG=19

DESIG=20

DESIG=21;OUR EVAL;→ UNCHECKED ←

DESIG=22

DESIG=23

DESIG=24

DESIG=25

Γ_{13}	$D^0 D^{*-} \pi^+ + c.c.$ (excl. $D^*(2010)^+ D^*(2010)^-$)	not seen	DESIG=26
Γ_{14}	$D_s^+ D_s^-$	not seen	DESIG=27
Γ_{15}	$D_s^{*+} D_s^- + c.c.$	seen	DESIG=28
Γ_{16}	$J/\psi \pi^+ \pi^-$	$< 3 \times 10^{-3}$	90% DESIG=2
Γ_{17}	$J/\psi \pi^0 \pi^0$	$< 3 \times 10^{-3}$	90% DESIG=3
Γ_{18}	$J/\psi K^+ K^-$	$< 2 \times 10^{-3}$	90% DESIG=4
Γ_{19}	$J/\psi \eta$	$< 8 \times 10^{-3}$	90% DESIG=5
Γ_{20}	$J/\psi \pi^0$	$< 1 \times 10^{-3}$	90% DESIG=6
Γ_{21}	$J/\psi \eta'$	$< 5 \times 10^{-3}$	90% DESIG=7
Γ_{22}	$J/\psi \pi^+ \pi^- \pi^0$	$< 1 \times 10^{-3}$	90% DESIG=8
Γ_{23}	$\psi(2S) \pi^+ \pi^-$	$< 4 \times 10^{-3}$	90% DESIG=9
Γ_{24}	$\chi_{c1} \gamma$	$< 7 \times 10^{-3}$	90% DESIG=10
Γ_{25}	$\chi_{c2} \gamma$	$< 1.3 \%$	90% DESIG=11
Γ_{26}	$\chi_{c1} \pi^+ \pi^- \pi^0$	$< 2 \times 10^{-3}$	90% DESIG=12
Γ_{27}	$\chi_{c2} \pi^+ \pi^- \pi^0$	$< 8 \times 10^{-3}$	90% DESIG=13
Γ_{28}	$h_c(1P) \pi^+ \pi^-$	$< 5 \times 10^{-3}$	90% DESIG=29
Γ_{29}	$h_c(1P) \pi^0 \pi^0$	$< 2 \times 10^{-3}$	90% DESIG=30
Γ_{30}	$h_c(1P) \eta$	$< 2 \times 10^{-3}$	90% DESIG=31
Γ_{31}	$h_c(1P) \pi^0$	$< 4 \times 10^{-4}$	90% DESIG=32
Γ_{32}	$\phi \pi^+ \pi^-$	$< 2 \times 10^{-3}$	90% DESIG=14

$\psi(4160)$ PARTIAL WIDTHS

$\Gamma(e^+ e^-)$

VALUE (keV)

0.83±0.07 OUR ESTIMATE

0.48±0.22

• • • We do not use the following data for averages, fits, limits, etc. • • •

	DOCUMENT ID	TECN	COMMENT	Γ_1
9 ABLIKIM	08D BES2	$e^+ e^- \rightarrow$ hadrons		
10 MO	10 RVUE	$e^+ e^- \rightarrow$ hadrons		
11 SETH	05A RVUE	$e^+ e^- \rightarrow$ hadrons		
12 SETH	05A RVUE	$e^+ e^- \rightarrow$ hadrons		
BRANDELIK	78C DASP	$e^+ e^-$		

9 Reanalysis of data presented in BAI 02C. From a global fit over the center-of-mass energy region 3.7–5.0 GeV covering the $\psi(3770)$, $\psi(4040)$, $\psi(4160)$, and $\psi(4415)$ resonances. Phase angle fixed in the fit to $\delta = (293 \pm 57)^\circ$.

10 Reanalysis of data presented in BAI 00 and BAI 02C. From a global fit over the center-of-mass energy 3.8–4.8 GeV covering the $\psi(4040)$, $\psi(4160)$ and $\psi(4415)$ resonances and including interference effects. Four sets of solutions are obtained with the same fit quality, mass and total width, but with different $e^+ e^-$ partial widths. We quote only the range of values.

11 From a fit to Crystal Ball (OSTERHELD 86) data.

12 From a fit to BES (BAI 02C) data.

NODE=M025220

NODE=M025W1

NODE=M025W1

→ UNCHECKED ←

OCCUR=2

NODE=M025W1;LINKAGE=AB

NODE=M025W1;LINKAGE=MO

NODE=M025W1;LINKAGE=ST

NODE=M025W1;LINKAGE=SE

NODE=M025225

NODE=M025R14

NODE=M025R14

NODE=M025R16

NODE=M025R16

$\psi(4160)$ BRANCHING RATIOS

$\Gamma(D\bar{D})/\Gamma(D^*\bar{D}^*)$

VALUE

0.02±0.03±0.02

DOCUMENT ID

AUBERT

TECN

BABR

COMMENT

Γ_2/Γ_8

AUBERT

09M

BABR

$e^+ e^- \rightarrow \gamma D^{(*)}\bar{D}^{(*)}$

$\Gamma(D^0\bar{D}^0)/\Gamma_{\text{total}}$

VALUE

seen

DOCUMENT ID

CRONIN-HEN..09

TECN

CLEO

COMMENT

Γ_3/Γ

seen

PAKHLOVA

08

BELL

$e^+ e^- \rightarrow D^0\bar{D}^0\gamma$

seen

not seen

• • • We do not use the following data for averages, fits, limits, etc. • • •

AUBERT

09M

BABR

$e^+ e^- \rightarrow D^0\bar{D}^0\gamma$

$\Gamma(D^+\bar{D}^-)/\Gamma_{\text{total}}$

VALUE

seen

DOCUMENT ID

CRONIN-HEN..09

TECN

CLEO

COMMENT

Γ_4/Γ

seen

PAKHLOVA

08

BELL

$e^+ e^- \rightarrow D^+\bar{D}^-\gamma$

seen

not seen

• • • We do not use the following data for averages, fits, limits, etc. • • •

AUBERT

09M

BABR

$e^+ e^- \rightarrow D^+\bar{D}^-\gamma$

NODE=M025R17

NODE=M025R17

$\Gamma(D^*(2007)^0 \bar{D}^0 + \text{c.c.})/\Gamma_{\text{total}}$	Γ_6/Γ	NODE=M025R18 NODE=M025R18
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>	
seen	AUBERT 09M BABR $e^+ e^- \rightarrow D^{*0} \bar{D}^0 \gamma$	
seen	CRONIN-HEN..09 CLEO $e^+ e^- \rightarrow D^{*0} \bar{D}^0$	
$\Gamma(D^*(2010)^+ D^- + \text{c.c.})/\Gamma_{\text{total}}$	Γ_7/Γ	NODE=M025R19 NODE=M025R19
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>	
seen	AUBERT 09M BABR $e^+ e^- \rightarrow D^{*+} D^- \gamma$	
seen	CRONIN-HEN..09 CLEO $e^+ e^- \rightarrow D^{*+} D^-$	
seen	PAKHLOVA 07 BELL $e^+ e^- \rightarrow D^{*+} D^- \gamma$	
$\Gamma(D^* \bar{D} + \text{c.c.})/\Gamma(D^* \bar{D}^*)$	Γ_8/Γ	NODE=M025R15 NODE=M025R15
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>	
0.34 \pm 0.14 \pm 0.05	AUBERT 09M BABR $e^+ e^- \rightarrow \gamma D^{(*)} \bar{D}^{(*)}$	
$\Gamma(D^*(2007)^0 \bar{D}^*(2007)^0)/\Gamma_{\text{total}}$	Γ_9/Γ	NODE=M025R20 NODE=M025R20
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>	
seen	AUBERT 09M BABR $e^+ e^- \rightarrow D^{*0} \bar{D}^{*0} \gamma$	
seen	CRONIN-HEN..09 CLEO $e^+ e^- \rightarrow D^{*0} \bar{D}^{*0}$	
$\Gamma(D^*(2010)^+ D^*(2010)^-)/\Gamma_{\text{total}}$	Γ_{10}/Γ	NODE=M025R21 NODE=M025R21
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>	
seen	AUBERT 09M BABR $e^+ e^- \rightarrow D^{*+} D^{*-} \gamma$	
seen	CRONIN-HEN..09 CLEO $e^+ e^- \rightarrow D^{*+} D^{*-}$	
seen	PAKHLOVA 07 BELL $e^+ e^- \rightarrow D^{*+} D^{*-} \gamma$	
$\Gamma(D^0 D^- \pi^+ + \text{c.c. (excl. } D^*(2007)^0 \bar{D}^0 + \text{c.c., } D^*(2010)^+ D^- + \text{c.c.}))/\Gamma_{\text{total}}$	Γ_{11}/Γ	NODE=M025R22 NODE=M025R22
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>	
not seen	PAKHLOVA 08A BELL $e^+ e^- \rightarrow D^0 D^- \pi^+ \gamma$	
$\Gamma(D \bar{D}^* \pi + \text{c.c. (excl. } D^* \bar{D}^*))/\Gamma_{\text{total}}$	Γ_{12}/Γ	NODE=M025R23 NODE=M025R23
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>	
seen	CRONIN-HEN..09 CLEO $e^+ e^- \rightarrow D \bar{D}^* \pi$	
$\Gamma(D^0 D^{*-} \pi^+ + \text{c.c. (excl. } D^*(2010)^+ D^*(2010)^-))/\Gamma_{\text{total}}$	Γ_{13}/Γ	NODE=M025R24 NODE=M025R24
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>	
not seen	PAKHLOVA 09 BELL $e^+ e^- \rightarrow D^0 D^{*-} \pi^+ \gamma$	
$\Gamma(D_s^+ D_s^-)/\Gamma_{\text{total}}$	Γ_{14}/Γ	NODE=M025R25 NODE=M025R25
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>	
not seen	PAKHLOVA 11 BELL $e^+ e^- \rightarrow D_s^+ D_s^- \gamma$	
not seen	DEL-AMO-SA..10N BABR $e^+ e^- \rightarrow D_s^+ D_s^- \gamma$	
not seen	CRONIN-HEN..09 CLEO $e^+ e^- \rightarrow D_s^+ D_s^-$	
$\Gamma(D_s^+ D_s^- + \text{c.c.})/\Gamma_{\text{total}}$	Γ_{15}/Γ	NODE=M025R26 NODE=M025R26
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>	
seen	PAKHLOVA 11 BELL $e^+ e^- \rightarrow D_s^{*+} D_s^- \gamma$	
seen	DEL-AMO-SA..10N BABR $e^+ e^- \rightarrow D_s^{*+} D_s^- \gamma$	
seen	CRONIN-HEN..09 CLEO $e^+ e^- \rightarrow D_s^{*+} D_s^-$	
$\Gamma(J/\psi \pi^+ \pi^-)/\Gamma_{\text{total}}$	Γ_{16}/Γ	NODE=M025R01 NODE=M025R01
<u>VALUE (units 10^{-3})</u> <u>CL%</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>	
<3 90	COAN 06 CLEO 4.12–4.2 $e^+ e^- \rightarrow$ hadrons	
$\Gamma(J/\psi \pi^0 \pi^0)/\Gamma_{\text{total}}$	Γ_{17}/Γ	NODE=M025R02 NODE=M025R02
<u>VALUE (units 10^{-3})</u> <u>CL%</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>	
<3 90	COAN 06 CLEO 4.12–4.2 $e^+ e^- \rightarrow$ hadrons	
$\Gamma(J/\psi K^+ K^-)/\Gamma_{\text{total}}$	Γ_{18}/Γ	NODE=M025R03 NODE=M025R03
<u>VALUE (units 10^{-3})</u> <u>CL%</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>	
<2 90	COAN 06 CLEO 4.12–4.2 $e^+ e^- \rightarrow$ hadrons	

$\Gamma(J/\psi\eta)/\Gamma_{\text{total}}$

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{19}/Γ
<8	90	COAN	06	CLEO 4.12–4.2 $e^+ e^- \rightarrow$ hadrons	NODE=M025R04 NODE=M025R04

 $\Gamma(J/\psi\pi^0)/\Gamma_{\text{total}}$

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{20}/Γ
<1	90	COAN	06	CLEO 4.12–4.2 $e^+ e^- \rightarrow$ hadrons	NODE=M025R05 NODE=M025R05

 $\Gamma(J/\psi\eta')/\Gamma_{\text{total}}$

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{21}/Γ
<5	90	COAN	06	CLEO 4.12–4.2 $e^+ e^- \rightarrow$ hadrons	NODE=M025R06 NODE=M025R06

 $\Gamma(J/\psi\pi^+\pi^-\pi^0)/\Gamma_{\text{total}}$

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{22}/Γ
<1	90	COAN	06	CLEO 4.12–4.2 $e^+ e^- \rightarrow$ hadrons	NODE=M025R07 NODE=M025R07

 $\Gamma(\psi(2S)\pi^+\pi^-)/\Gamma_{\text{total}}$

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{23}/Γ
<4	90	COAN	06	CLEO 4.12–4.2 $e^+ e^- \rightarrow$ hadrons	NODE=M025R08 NODE=M025R08

 $\Gamma(\chi_{c1}\gamma)/\Gamma_{\text{total}}$

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{24}/Γ
<7	90	COAN	06	CLEO 4.12–4.2 $e^+ e^- \rightarrow$ hadrons	NODE=M025R09 NODE=M025R09

 $\Gamma(\chi_{c2}\gamma)/\Gamma_{\text{total}}$

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{25}/Γ
<13	90	COAN	06	CLEO 4.12–4.2 $e^+ e^- \rightarrow$ hadrons	NODE=M025R10 NODE=M025R10

 $\Gamma(\chi_{c1}\pi^+\pi^-\pi^0)/\Gamma_{\text{total}}$

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{26}/Γ
<2	90	COAN	06	CLEO 4.12–4.2 $e^+ e^- \rightarrow$ hadrons	NODE=M025R11 NODE=M025R11

 $\Gamma(\chi_{c2}\pi^+\pi^-\pi^0)/\Gamma_{\text{total}}$

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{27}/Γ
<8	90	COAN	06	CLEO 4.12–4.2 $e^+ e^- \rightarrow$ hadrons	NODE=M025R12 NODE=M025R12

 $\Gamma(h_c(1P)\pi^+\pi^-)/\Gamma_{\text{total}}$

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{28}/Γ
<5	90	13 PEDLAR	11	CLEO $e^+ e^- \rightarrow h_c(1P)\pi^+\pi^-$	NODE=M025R27 NODE=M025R27

13 At $\sqrt{s} = 4170$ MeV, PEDLAR 11 measures $\sigma(e^+ e^- \rightarrow h_c(1P)\pi^+\pi^-) = 15.6 \pm 2.3 \pm 1.9 \pm 3.0$ pb, where the errors are statistical, systematic, and due to uncertainty in $B(\psi(2S) \rightarrow \pi^0 h_c(1P))$, respectively.

 $\Gamma(h_c(1P)\pi^0\pi^0)/\Gamma_{\text{total}}$

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{29}/Γ
<2	90	14 PEDLAR	11	CLEO $e^+ e^- \rightarrow h_c(1P)\pi^0\pi^0$	NODE=M025R28 NODE=M025R28

14 At $\sqrt{s} = 4170$ MeV, PEDLAR 11 measures $\sigma(e^+ e^- \rightarrow h_c(1P)\pi^0\pi^0) = 3.0 \pm 3.3 \pm 1.1 \pm 0.6$ pb, where the errors are statistical, systematic, and due to uncertainty in $B(\psi(2S) \rightarrow \pi^0 h_c(1P))$, respectively.

 $\Gamma(h_c(1P)\eta)/\Gamma_{\text{total}}$

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{30}/Γ
<2	90	15 PEDLAR	11	CLEO $e^+ e^- \rightarrow h_c(1P)\eta$	NODE=M025R29 NODE=M025R29

15 At $\sqrt{s} = 4170$ MeV, PEDLAR 11 measures $\sigma(e^+ e^- \rightarrow h_c(1P)\eta) = 4.7 \pm 1.7 \pm 1.0 \pm 0.9$ pb, where the errors are statistical, systematic, and due to uncertainty in $B(\psi(2S) \rightarrow \pi^0 h_c(1P))$, respectively.

 $\Gamma(h_c(1P)\pi^0)/\Gamma_{\text{total}}$

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{31}/Γ
<0.4	90	16 PEDLAR	11	CLEO $e^+ e^- \rightarrow h_c(1P)\pi^0$	NODE=M025R30 NODE=M025R30

16 At $\sqrt{s} = 4170$ MeV, PEDLAR 11 measures $\sigma(e^+ e^- \rightarrow h_c(1P)\pi^0) = -0.7 \pm 1.8 \pm 0.7 \pm 0.1$ pb, where the errors are statistical, systematic, and due to uncertainty in $B(\psi(2S) \rightarrow \pi^0 h_c(1P))$, respectively.

$\Gamma(\phi\pi^+\pi^-)/\Gamma_{\text{total}}$

<u>VALUE (units 10^{-3})</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	Γ_{32}/Γ
<2	90	COAN	06	CLEO 4.12–4.2 $e^+ e^- \rightarrow$ hadrons	

 $\psi(4160)$ REFERENCES

PAKHLOVA	11	PR D83 011101	G. Pakhlova <i>et al.</i>	(BELLE Collab.)	REFID=53638
PEDLAR	11	PRL 107 041803	T. Pedlar <i>et al.</i>	(CLEO Collab.)	REFID=16787
DEL-AMO-SA...	10N	PR D82 052004	P. del Amo Sanchez <i>et al.</i>	(BABAR Collab.)	REFID=53532
MO	10	PR D82 077501	X.H. Mo, C.Z. Yuan, P. Wang	(BHEP)	REFID=53540
AUBERT	09M	PR D79 092001	B. Aubert <i>et al.</i>	(BABAR Collab.)	REFID=52724
CRONIN-HEN...	09	PR D80 072001	D. Cronin-Hennessy <i>et al.</i>	(CLEO Collab.)	REFID=53114
PAKHLOVA	09	PR D80 091101	G. Pakhlova <i>et al.</i>	(BELLE Collab.)	REFID=53143
ABLIKIM	08D	PL B660 315	M. Ablikim <i>et al.</i>	(BES Collab.)	REFID=52142
PAKHLOVA	08	PR D77 011103	G. Pakhlova <i>et al.</i>	(BELLE Collab.)	REFID=52132
PAKHLOVA	08A	PRL 100 062001	G. Pakhlova <i>et al.</i>	(BELLE Collab.)	REFID=52134
PAKHLOVA	07	PRL 98 092001	G. Pakhlova <i>et al.</i>	(BELLE Collab.)	REFID=51628
COAN	06	PRL 96 162003	T.E. Coan <i>et al.</i>	(CLEO Collab.)	REFID=51075
SETH	05A	PR D72 017501	K.K. Seth		REFID=50813
BAI	02C	PRL 88 101802	J.Z. Bai <i>et al.</i>	(BES Collab.)	REFID=50506
BAI	00	PRL 84 594	J.Z. Bai <i>et al.</i>	(BES Collab.)	REFID=50503
OSTERHELD	86	SLAC-PUB-4160	A. Osterheld <i>et al.</i>	(SLAC Crystal Ball Collab.)	REFID=51064
BRANDELIK	78C	PL 76B 361	R. Brandelik <i>et al.</i>	(DASP Collab.)	REFID=22232

NODE=M025R13

NODE=M025R13

NODE=M025